

What is claimed is:

1. A substrate usable for an acoustic surface wave device, comprising a base material made of C-faced sapphire single crystal, and an AlN film having crystallinity of 90 arcsec or below in FWHM of X-ray rocking curve and surface flatness of 20Å or below which is formed by an MOCVD method using trimethylaluminum and ammonia as raw material gases.
2. A substrate as defined in claim 1, further comprising a surface nitride layer at the main surface of the base material on which the AlN film is formed.
3. A method for fabricating a substrate usable for an acoustic surface wave device, comprising the steps of:  
preparing a base material made of C-faced sapphire single crystal, and forming, on the base material, an AlN film on the condition that the temperature of the base material is set to 1100°C or over, and the ratio (V raw material gas/III raw material gas) is set to 800 or over.
4. A fabricating method as defined in claim 3, further comprising the step of nitriding the main surface of the base material, to form a surface nitride layer at the main surface, wherein the AlN film is formed on the main surface via the surface nitride layer.
5. A fabricating method as defined in claim 3 or 4, wherein the forming pressure of the AlN film is set within a range of 7-17 Torr.
6. An acoustic surface wave device, comprising a substrate composed of a base material made of C-faced sapphire single crystal and an AlN film, formed on the base material, having crystallinity of 90 arcsec or below in FWHM of X-ray rocking curve and surface flatness of 20Å or below, and inter digital type electrodes.
7. An acoustic surface wave device as defined in claim 6, wherein the substrate includes a surface nitride layer at the main surface of the base material on which the AlN film is formed.